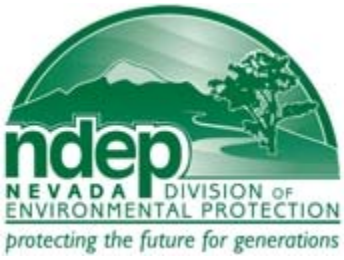
CLASS I APPLICATION REVIEW

FOR:

Toquop Energy, LLC
Toquop Energy Project
Near Mesquite, Nevada

Class I Operating Permit to Construct AP4911-1146
(FIN # A0381) (Aircase # 07AP0270)



BY

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR POLLUTION CONTROL

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1.0 INTRODUCTION

Toquop Energy LLC, (Toquop) submitted a Prevention of Significant Deterioration (PSD) Class I Operating Permit to Construct Application to the Nevada Division of Environmental Protection - Bureau of Air Pollution Control (BAPC) on February 12, 2007. Toquop is proposing to construct and operate a new, base-load coal-fired power generation facility, approximately 14 miles northwest of Mesquite, in Lincoln County, Nevada. The proposed facility will have a 750 Megawatt (MW) nominal generating capacity and will be fueled by Western bituminous or sub-bituminous coal. The facility will consist of:

- One 750 MW nominal, super-critical, pulverized coal-fired boiler
- Two distillate fuel-fired auxiliary boilers
- One Emergency diesel emergency generator engine
- One diesel firewater pump engine
- One fly ash storage silo
- One bottom ash storage silo
- One gypsum storage silo
- Two quicklime storage silos
- One activated carbon storage silo
- One byproduct storage silo
- One Heller-type, dry natural draft cooling tower
- Coal unloading, transfer, storage, reclaim and crushing operations
- One, 1,060,000 gallon fuel oil storage tank
- Insignificant activities: fuel oil, lube oil, used oil and gasoline storage tanks

The Toquop facility is to be constructed on a site that consists of approximately 640 acres of Bureau of Land Management (BLM) land located approximately 14 miles northwest of the town of Mesquite, Nevada. Specifically, Zone 11 (Section 36, Township 11 South, Range 69 East, in Hydrographic Area 222 – Virgin River Valley). The Standard Industrial Classification (SIC) number for the facility is 4911 (Electric Services), since the primary product is electric power for sale.

2.0 DESCRIPTION OF PROCESS

2.1 STEAM BOILER

The proposed Toquop facility will include one pulverized coal (PC), super-critical boiler and a steam turbine generator capable of generating 750 MW (gross) of electric power. The steam generated in the boiler is used to drive its individual steam turbine generator. The steam expands through the steam turbine, such that the thermal energy contained in the steam is converted to the mechanical energy required to rotate the steam turbine-generator shaft. The generator, which is directly coupled to the steam turbine, uses this mechanical energy to produce electricity. After releasing all economically-available energy, the steam exhausts from the steam turbine-generator and flows into the condenser, where waste heat in the steam is removed to condense the steam and form water. The condensed water is then pumped back to the boiler to complete the cycle. The boiler will be permitted to operate up to 8,760 hours per year. The emissions control equipment for the boiler, during normal operations, will consist of low NO_x burners, over-fire air and selective catalytic reduction (SCR) for NO_x emissions control, wet scrubber for SO_2 emissions control, and a fabric filter baghouse for particulate matter control and halogenated activated carbon for mercury emissions control. This set of control equipment will also serve to control hazardous air pollutants and acid gases (H_2SO_4 mist, HCL, HF). The PC boiler is subject to the requirements of New Source Performance Standard (NSPS) Subpart Da, *Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978*.
The PC boiler is also subject to the requirements of the Nevada Clean Air Mercury Rule State Plan (CAMR) as well as Federal provisions set forth in NSPS Subpart HHHH – Mercury Cap-and-Trade Program and NSPS Subpart Da – Mercury emission rates. The Toquop facility is being designed to meet the 97.0×10^{-6} lb/MWh output based mercury emission rate as outlined in the NSPS Subpart Da provisions.

The Federal Clean Air Mercury Rule establishes “standards of performance” limiting mercury emissions from new and existing coal-fired power plants and creates a market-based cap-and-trade program that will reduce nationwide utility emissions of mercury in two distinct phases. The first phase cap is 38 tons and emissions will be reduced by taking advantage of “co-benefit” reductions – that is, mercury reductions achieved by reducing sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions under EPA’s Clean Air Interstate Rule (CAIR). In the second phase, due in 2018, coal-fired power plants will be subject to a second cap, which will reduce emissions to 15 tons upon full implementation.

- New coal-fired power plants (“new” means construction starting on or after Jan. 30, 2004) will have to meet stringent NSPS provisions, as outlined in Subpart Da, in addition to being subject to the caps.

2.2 AUXILIARY BOILERS

The Toquop facility will include two auxiliary boilers to be used during startup of the PC boiler and during periods when the PC boiler is off line. Operation of the auxiliary boilers will be limited to 550 hours per year, each, and the fuel source limited to ultra low sulfur (0.0015 percent sulfur) distillate fuel with a maximum heat input rate of 86.4 MMBtu/hr, each. The auxiliary boilers will have low NO_x burners, flue gas recirculation and combustion control optimization to limit emissions. The auxiliary boilers are subject to the requirements of the New Source Performance Standard (NSPS) Subpart Dc, *Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units*
Please note: A federal court has vacated the Boiler MACT Rule (NESHAPS, 40 CFR Part 63, Subpart DDDDD) effectively eliminating the MACT applicability requirements for the two auxiliary boilers. The major HAP emitter for this facility is the PC Boiler.

2.3 Emergency Diesel Generator and Firewater Pump Engine

There will be one emergency diesel generator with an output capacity of 1,482 horsepower, and one fire-water pump engine with an output capacity of 284 horsepower. These units will only operate during emergency situations and for readiness maintenance checks. Emissions will be controlled by burning ultra low sulfur (0.0015 percent sulfur) distillate fuel, through good combustion practices and limiting normal operation to a maximum of 100 hours/year for each engine. Pursuant to NAC 445B.288(2), the emergency diesel engine generator and the firewater pump engine are subject to requirements pursuant to NSPS 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.*

2.4 Materials Handling

2.4.1 Coal Receiving, Storage and Handling

Coal will be delivered to the Toquop facility via train and will be unloaded from bottom dump rail cars into an underground bunker. Bottom dump unloading, consisting of two 2,500 tons/hour stations, will be used to unload the coal to an underground hopper at a combined 5,000-ton/hour rate. The underground hopper and belt feeders will load coal onto a 5,000-ton/hour conveyor belt that will transfer to coal to a transfer tower. The transfer tower may direct coal to the power plant coal crusher, active coal pile and/or inactive coal pile.

The active coal pile is sized for 30 days of coal storage. Stack-out of the active coal pile will be performed by an automatic, in-line, track-mounted stacker / re-claimer capable of 5,000 tons/hour stacking and 1,000-tons/hour reclaim using either one of two redundant reclaim conveyor belts. The active coal pile can be stacked and reclaimed without the use of mobile equipment (bulldozers). Particulate emissions from the coal pile will be controlled by wet suppression.

The inactive storage will contain a 90-day supply of coal with the ability to expand to a 180-day supply of coal adjacent to the active storage pile. Coal supplied to the inactive pile will come from the transfer tower via conveyor capable of 5,000 tons/hour discharging through an automated, telescoping discharge chute to minimize emissions. Stack-out of the inactive coal pile will be performed with mobile equipment consisting of front-end loaders and bulldozers. Emissions from the inactive pile will be controlled by wet suppression and compaction. Reclaim from the active coal pile also will be with mobile equipment to an in-ground grizzly and hopper discharging to a 1,000-tons/hour conveyor that feeds the transfer tower. Front-end loaders will assist the reclaiming of coal from spills or maintenance and return it to the inactive storage pile or in-ground hopper.

2.4.1 Coal Receiving, Storage and Handling (Continued)

Two conveyor belts rated at 1,000 tons/hour each (one in operation, one backup) will be used to convey the reclaim coal to the coal crusher building. In the coal crusher building, coal from the 1,000-tons/hour reclaim belts will empty into a 150-ton surge bin. In the coal crusher building, one coal crusher assembly rated at 1,500 tons/hour will crush the coal into a size suitable for combustion. From the coal crusher building, one conveyor belt rated at 1,000 tons/hour (with a second 1,000-tons/hour conveyor belt serving as backup) will transfer the coal to the boiler tripper deck. In the coal transfer tower, coal will be transferred to a 1,000-tons/hour tripper conveyor, which will load the five, 360-ton coal bunkers. A sixth coal bunker is provided as a spare. Particulate emissions from the coal unloading, transfer and handling system operations will be controlled by wet suppression and/or baghouses. Coal operations from the conveyance and transfer systems are subject to NSPS Subpart Y, *Standards of Performance for Coal Preparation Plants*.

2.4.2 Storage Silos

The proposed Toquop facility also includes the following storage silos:

- One fly ash storage silo;
- One bottom ash storage silo;
- Two quicklime storage silos;
- One gypsum storage silo;
- One activated carbon storage silo; and
- One by-product silo for landfill.

Fly ash from the PC Boiler exhaust stream will be captured in the main boiler baghouse. The fly ash will be pneumatically conveyed from the baghouse hoppers to the fly ash storage silo. Emissions from the pneumatic loading into the fly ash silo will be controlled by a vent fan filter. The storage silo is designed for 10 days of storage at 100 percent power output of the plant. Fly ash may be transferred from the storage silo through gravity feed using an extension tube into either railcar or truck for beneficial re-use within a negative pressure transfer bay to ensure dustless load-out. The transfer will be equipped with a vent fan filter. Fly ash that bypasses the storage silo will be transferred to a by-product silo.

2.4.2 Storage Silos (Continued)

Bottom ash will be removed from the dry bottom boiler, crushed and pneumatically transported into a bottom ash storage silo with a 10-day storage capacity. From the storage silo, this material could be loaded dry into pneumatic trucks or railcars for shipping for beneficial re-use, using a dustless load-out. Emissions from the pneumatic loading into the bottom ash silo will be controlled by a vent fan filter. Bottom ash that bypasses the storage silo will be transferred to the by-product silo.

As an integral part of the wet scrubber system, quicklime will be delivered to the plant via trucks. The quicklime will be transferred pneumatically to the quicklime storage silos with 4-day capacities. The quicklime storage silos will have their own vent fan filters to control particulate emissions that occur during transfer operations. Quicklime from the storage silos is transferred pneumatically to the quicklime preparation building through an enclosed process. The quicklime is mixed with water and stored in slurry tanks near the wet flue gas de-sulfurization system prior to injection into the flue gas for SO_2 control. This is a dustless operation. After the quicklime captures sulfur, it becomes synthetic gypsum and must be removed from the process through filters and driers.

Gypsum will be removed from the wet scrubber, dried and conveyed to the gypsum storage silo with a 10-day storage capacity. Emissions from loading the gypsum silo will be controlled by a vent fan filter. From the storage silo, the gypsum will be transferred to trucks or railcars for shipping to purchasers. Gypsum that bypasses the storage silo will be sent to the byproduct silo.

The byproduct silo receives bottom ash, fly ash and gypsum that bypass their storage silos due to capacity constraints on their storage silos, not meeting beneficial re-use specifications, system transients or upsets. The byproduct silo is equipped with a vent fan filter, and has a 500-ton surge capacity to feed a pug mill. Two pug mills are installed for redundancy and each is rated for 100 percent capacity. A pug mill mixes the combustion byproducts and water to 18 percent moisture content prior to transfer into trucks for disposal at the on-site landfill. Fugitive particulate emissions may occur during the transfer from the pug mill to the trucks, but will be minimized by the moisture content of the byproduct.

2.4.2 Storage Silos (Continued)

An activated carbon silo is proposed to provide 4 days of storage capacity for activated carbon, which would act as part of a mercury/multi-pollutant control system. The activated carbon will be delivered to the plant via trucks. The activated carbon will be pneumatically transferred to the activated carbon storage silo, with particulate emissions that occur during transfer operations being controlled by a vent fan filter. The activated carbon will then be fed to the PC boiler flue gases via a conveyor and blower system. Particulate emissions occurring during the discharge of the activated carbon to the PC boiler will be controlled by the main PC boiler baghouse.

2.5 Heat Rejection (Cooling) System

The Heller-type hybrid cooling tower is used to minimize water consumption. A direct contact jet condenser will be used with a Heller dry cooling tower system. In this cooling system, the process steam exhausting from the steam turbine is fed to the condenser and condensed by direct impingement with the cooling water coming from the closed cooling cycle. The blended cooling water and condensate are collected in the hot-well and extracted by circulating water pumps. Approximately 3 percent of this flow – corresponding to the steam condensed – is fed to the PC boiler feed water system by condensate pumps. The major part of the flow is returned to the cooling tower for re-cooling. The cooling duty is performed by the cooling delta-type heat exchangers, divided into parallel sectors at the base of a hyperbolic cooling tower. A dry natural draft is induced through the cooling tower due to the differential temperature and the shape of the cooling tower. This type of cooling tower does not emit particulate emissions.

2.6 Ash Disposal Area

An on-site ash disposal area of approximately 150 acres will be used to dispose of fly ash, bottom ash and gypsum from the main PC boiler that may not be recycled. The fly ash, bottom ash and gypsum will be mixed with water as it is unloaded from the byproduct silo into trucks, which will then transport the combustion byproducts to the ash disposal area located on the eastern portion of the property. The trucks will unload the byproducts in the active disposal area that will be limited to no more than 10 acres at any one time.

2.7 Fuel and Oil Storage Tanks

One, 1,060,000-gallon fuel oil storage tank; one, 4,000-gallon fuel oil storage tank; one, 1,000-gallon gasoline storage tank; two, 14,000-gallon lube oil storage tanks; two, 3,000-gallon lube oil storage tanks; one 1,000-gallon used oil storage tank; and one, 300-gallon fuel oil storage tank will be located onsite. The 1,060,000 gallon distillate fuel storage tank will store material with a maximum vapor pressure less than 3.5 kPa and therefore, is ***NOT*** subject to the recordkeeping requirements of NSPS Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*. Pursuant to NAC 445B.288, the remaining fuel storage tanks at the proposed Toquop facility are insignificant activities and therefore, not subject to permitting requirements.

3.0 APPLICABLE REQUIREMENTS

Applicable requirements are those regulatory requirements that apply to a stationary source or to emissions units contained within the stationary source. In Nevada's program, the regulations governing the emissions of air pollutants from which the applicable requirements originate, are derived from four categories of regulations. These four categories consist of the requirements contained in the Nevada Revised Statutes (NRS), the Nevada Administrative Code (NAC), the Applicable State Implementation Plan (ASIP), and the Code of Federal Regulations (CFR, contained in various Parts within Title 40).

3.1 GENERALLY APPLICABLE REQUIREMENTS

Of the four categories of regulations governing emissions of air pollutants, there are many generally applicable requirements that apply to stationary sources and emission units located at a stationary source. A comprehensive summary of all the generally applicable permit requirements is contained in Sections I through V of the proposed operating permit to construct provided in Attachment 4.

3.2 SPECIFIC APPLICABLE REQUIREMENTS

The remainder of this section of the review will focus on specific applicable requirements associated with each emission unit or process at the Toquop facility. A list of the emission units, as identified in the application and a summary of the specific applicable requirements is contained in Table 3.2.1 below.

3.0 APPLICABLE REQUIREMENTS (Continued)

TABLE 3.2.1

EU #	Unit Description	NAC (445B)	NSPS (40 CFR Part 60)	NESHAPS 40 CFR Part 63)	PSD (40 CFR Part 52)	Acid Rain (40 CFR Parts 72-78)
S2.001	Pulverized Coal Utility Boiler	.3405, .305, .22017, .2202, .2203, .22047	Subpart Da: Subpart HHHH: CAMR	N/A	52.21	72.6, 73 et seq., 75 et. seq., 77 et. Seq and 78 et. Seq.
S2.002 & S2.003	Auxiliary Boilers	.3405, .305, .22017, .2202, .2203, .22047,	Subpart Dc	Subpart DDDDD (vacated)	52.21	72.6, 73 et seq., 75 et. seq., 77 et. Seq and 78 et. Seq.
S2.004	Emergency Diesel Generator	.3405, .305, .22017	Subpart IIII (CI ICE)	Subpart ZZZZ	52.21	N/A
S2.005	Emergency Diesel Firewater Pump	.3405, .305, .22017	Subpart IIII (CI ICE)	N/A	52.21	N/A
PF1.001 – PF1.004	Coal Handling; Railcar Unloading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.006 – S2.007	Coal Handling; Transfer Tower	.3405, .305, .22017, .22033	Subpart Y	N/A	52.21	N/A
PF1.005 – PF1.007	Coal Handling; Coal Stack-out	.3405, .305, .22017, .22033	Subpart Y	N/A	52.21	N/A
PF1.008 – PF1.010	Coal Handling; Storage Piles	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.008 – S2.012	Coal Handling; Crusher Building	.3405, .305, .22017, .22033	Subpart Y	N/A	52.21	N/A
S2.013 – S2.018	Coal Handling; Tripper Deck	.3405, .305, .22017, .22033	Subpart Y	N/A	52.21	N/A
2.019	Bottom Ash Silo; Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.011	Bottom Ash Silo; Un-Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.020	Fly Ash Silo; Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.012	Fly Ash Silo; Un-Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.021	FGD/Gypsum Silo; Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.013	FGD/Gypsum Silo; Un-Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.022	Quicklime Silos; Loading (#1)	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.014	Quicklime Silos; Un-Loading (#1)	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A

EU #	Unit Description	NAC (445B)	NSPS (40 CFR Part 60)	NESHAPS 40 CFR Part 63)	PSD (40 CFR Part 52)	Acid Rain (40 CFR Parts 72-78)
S2.023	Quicklime Silos; Loading (#2)	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.015	Quicklime Silos; Un-Loading (#2)	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.024	Carbon Silo; Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.025	Byproduct/Waste Silo; Loading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
PF1.016	Byproduct/Waste Silo; Unloading	.3405, .305, .22017, .22033	N/A	N/A	52.21	N/A
S2.026	Fuel Storage Tank	.3405, .305, .22017	N/A	N/A	52.21	N/A

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.1 NEVADA REVISED STATUTES

The Nevada Revised Statutes (NRS) is the statutory authority for the adoption and implementation of administrative regulations. The statutes relating to the control of air pollution are contained in NRS 445B.100 through 445B.640. The NRS specifies that the State Environmental Commission is the governing body given the power to adopt administrative regulations. Because the NRS is the enabling statutory authority, very few specific requirements are contained in the statutes. Rather, the NRS provides, generally, broad authority for the adoption and implementation of air pollution control regulations.

3.2.2 NEVADA ADMINISTRATIVE CODE

The Nevada Administrative Codes (NAC) are administrative regulations that contain specific requirements relating to the control of air pollution. The State Environmental Commission adopts these regulations. The NAC requires that, where state regulations are more stringent in comparison to Federal regulations, the State regulations are applicable. The NAC sets forth, by rule, maximum emission standards for visible emissions (opacity), PM_{10} and sulfur emitting processes as well as implementing the federal Clean Air Mercury Rule (CAMR) regulations. Other requirements are established for incinerators, storage tanks, odors and maximum concentrations of regulated air pollutants in the ambient air. Other NAC regulations specify the requirements for applying for and method of processing applications for operating permits. All of the equipment considered in this application must meet, at a minimum, the applicable standards and requirements set forth in the NAC. Specifically, the emission standards contained in NAC 445B.22027 through .22033 for particulate matter, 445B.2204 through .22047 for sulfur emissions, 445B.22017 for opacity, and 445B.310 for the ambient air quality standards must not be exceeded.

3.2.3 NEVADA APPLICABLE SIP (ASIP)

The Applicable State Implementation Plan (ASIP) is a document that is prepared by a State or Local air regulatory agency and required to be submitted to the U.S. EPA for approval. Title I of the Clean Air Act is the statutory authority for the U.S. EPA regulations that require a State to submit a SIP. The contents of the SIP are intended to show how a State, through the implementation and enforcement of the regulations contained in the SIP, will either show how attainment of the ambient air quality standards (NAAQS) will be achieved or how a State will continue to maintain compliance with the NAAQS. Nevada has an updated SIP currently being reviewed by EPA, Region IX. Parts of this updated SIP have been approved. The ASIP is partially updated.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4 CODE OF FEDERAL REGULATIONS (CFR)

The Code of Federal Regulations (CFR) are regulations adopted by the U.S. EPA and published in the Federal Register pursuant to the authority of the granted by Congress in the Clean Air Act. The CFR addresses multiple aspects, including but not limited to, permitting requirements, performance standards, testing methods, and monitoring requirements.

3.2.4.1 New Source Performance Standards (NSPS)

The U.S. EPA has promulgated maximum emission standards and/or monitoring/recordkeeping methods for selected source categories. These standards are contained in Title 40 of the CFR, Part 60, and are known as the New Source Performance Standards (NSPS). The PC Utility Boiler is subject to Subpart Da and Subpart HHHH, the Auxiliary Boilers are subject to Subpart Dc, both the emergency diesel generator and the emergency diesel fire pump are subject to Subpart IIII, various coal handling processes are subject to Subpart Y, and the 1,060,000 gallon fuel storage tank, because of the low vapor pressure of the liquid stored, is exempt from the requirements of Subpart Kb.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

The federal NESHAP requirements are found in two parts of the 40 CFR: Part 61 and Part 63.

Part 61, which predates the Clean Air Act Amendments of 1990, includes specific standards, reporting and recordkeeping requirements, and test methods for the initial eight hazardous air pollutants: asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride. The regulations covering these eight hazardous air pollutants focused on health-based considerations. NESHAPs were established for certain operations that commonly emit the eight hazardous air pollutants.

Other substances were included for consideration due to the serious health effects, including cancer, that may occur from ambient air exposure to those substances. However, no specific restrictions were placed on facilities that used or released these compounds.

Under the Clean Air Act Amendments of 1990, Congress greatly expanded the Air Toxics program, creating a list of 189 substances to be regulated as hazardous air pollutants. Rather than regulating individual pollutants by establishing health-based standards, the new Air Toxics program granted EPA the authority to regulate specific industrial major source categories with NESHAPs based on maximum achievable control technology (MACT) for each source category. Thus, a number of NESHAPs have been established to regulate specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants.

The standards in 40 CFR Part 63 are independent of the NESHAPs contained in 40 CFR Part 61 which remain in effect until they are amended, if appropriate, and added to this part. More information on NESHAPs can be found at the EPA Unified Air Toxics Website.

NESHAPs may cover both major sources and area sources in a given source category. Major sources are defined as those facilities emitting, or having the potential to emit, 10 tons per year or more of one Hazardous Air Pollutant (HAP) or 25 tons per year or more of multiple HAPs. Major sources are required to comply with MACT standards. Area sources are defined as those facilities that are not major sources.

Toquop's OPTC application has identified one individual HAP, emitted from the PC Boiler, as having the potential to emit greater than the 10 tons per year threshold, i.e. Hydrogen Chloride, at 50.6 tons per year. Major source status for HAPs for the proposed Toquop facility will subject Toquop to any applicable NESHAP/MACT source standards.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4.2 National Emission Standards for Hazardous Air Pollutants (NESHAP) (cont.)

In October (10/28/05), EPA published two reconsideration notices in the Federal Register related to the Agency's Clean Air Mercury Rule (CAMR), which was signed on March 15, 2005. The first notice dealt with the rule itself, which will regulate Hg emissions from new and existing electric generating units (EGUs). Issues that the Agency stated in its intent to re-consider include:

- Phase I (2010) statewide Hg emission budgets and the unit-level allocations on which the budgets were based.
- Definition of "designated pollutant" under 40 CFR 60.21
- EPA's sub-categorization of EGUs that burn sub-bituminous coal
- Statistical analysis used to set NSPS emission limits
- Hg content in coal used to establish NSPS emission limits
- Definition of covered units as including municipal waste combustors
- Definition of covered units as including some industrial boilers.

The second notice dealt with the Agency's revision of its December 2000 regulatory finding on the emissions of hazardous air pollutants from electric utility generating units and the removal of coal- and oil-fired electric generating units from the Clean Air Acts Amendments (CAA) Section 112(c) list. This decision was published in the Federal Register on March 29, 2005.

The NDEP-BAPC recognizes that there is a lawsuit surrounding the above mentioned regulatory finding and when and if there is a resolution, the NDEP-BAPC will respond.

The utility boiler HAP PTE counts towards facility-wide HAP PTE and other category MACT regulations apply to other applicable emission units. The emergency diesel generator is subject to 40 CFR, Subpart ZZZZ (initial notification requirements only).

40 CFR Part 63.52(b)(1): When one or more sources in a category or subcategory subject to the requirements of 40 CFR Part 63.52 are installed at a major source, or result in the source becoming a major source due to the installation, and the installation does not invoke section 112(g) of the Clean Air Act requirements, ***The Permittee*** must submit an application meeting the requirements of 40 CFR Part 63.53(a) within 30 days of startup of the source.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4.3 Prevention of Significant Deterioration Regulations (PSD)

Implementation of the federal PSD regulations is delegated to the State of Nevada by U.S. EPA and these regulations are contained at 40 CFR Part 52.21. Therefore, BAPC implements the federal PSD regulations directly. These regulations specify federally required permitting procedures for each "major stationary source". The PSD regulations define a "stationary source" as "*any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the Act.*" A "building structure facility or installation" is defined as "*all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same 'Major Group' (i.e., which have the same first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement.*"

"Major" is defined as the potential to emit of a stationary source, which equals or exceeds a specified threshold (in tons per year) of any air pollutant regulated under the Clean Air Act (40 CFR 52.21(b)(1)). The first threshold is for a stationary source that emits or has the potential to emit 100 tons per year or more of any regulated NSR pollutant and is defined as one of 28 specific categories of sources (see 40 CFR 52.21(b)(1)(i)(a)). The other applicability threshold is for any other stationary source that emits or has the potential to emit 250 tons per year of any regulated NSR pollutant (see 40 CFR 52.21(b)(1)(i)(b)). As mentioned above, the SIC code for this facility is 4911. Therefore, the major SIC grouping is 49, which is identified as "Electric, Gas, and Sanitary Services" in the SIC manual. Major stationary source status is classified at the 100 tons per year emission threshold for any pollutant regulated NSR pollutant as Toquop is identified as one of the 28 source categories. As identified in Section 4.0 of this review, the Toquop facility has the potential to emit greater than the 100 tons per year threshold for several NSR regulated pollutants and, as such, is classified as a major stationary source for PSD purposes.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4.3 Prevention of Significant Deterioration Regulations (PSD) (Cont.)

Pursuant to the provisions set forth in 40 CFR §52.21(c)(j)(2), a PSD review is triggered in certain instances when emissions associated with a new major source or emissions increases resulting from a major modification are "significant."

"Significant" emissions thresholds are defined two ways. The first is in terms of emission rates (tons/year). The second type of “significant” emissions threshold is defined as any emissions rate at a new major stationary source (or any net emissions increase associated with a modification to an existing major stationary source) that is constructed within 10 kilometers of a Class I area, and which would increase the 24-hour average concentration of any regulated NSR pollutant in that area by 1 $\mu g/m^3$ or greater.

40 CFR 52.21(b)(23)(i) lists the pollutants for which significant emissions rates have been established.

(1) For a new source (i.e., Toquop) which is major for at least one regulated attainment or noncriteria pollutant, (i.e., is subject to PSD review), all pollutants for which the area is not classified as nonattainment and which are emitted in amounts equal to or greater than those specified in 40 CFR 52.21(b)(23)(i) (≥ significant threshold) are also subject to PSD review.

3.0 APPLICABLE REQUIREMENTS (Continued)

3.2.4.4 Acid Rain

The Clean Air Act Amendments of 1990 (Title IV) established a requirement to reduce the emissions of pollutants contributing to acid rain (SO_2 and NO_x). It also established a market-based emissions trading program for SO_2. U.S. EPA is responsible for developing regulations and implementing the requirements of the acid rain provisions of the Clean Air Act Amendments. As a result, U.S. EPA adopted acid rain related regulations at 40 CFR Parts 72 through 78.

The overall goal of the Acid Rain Program is to achieve environmental and public health benefits through reductions in emissions of SO_2 and NO_x. To achieve this goal, the program employs both traditional and innovative, market-based approaches for controlling air pollution. Title IV of the Clean Air Act sets as its primary goal the reduction of annual SO_2 emissions by 10 million tons below 1980 levels. To achieve these reductions, the law requires a two-phase tightening of the restrictions placed on fossil fuel-fired power plants.

Phase I began in 1995 and affects 263 units at 110 mostly coal-burning electric utility plants located in 21 eastern and Midwestern states. An additional 182 units joined Phase I of the program as substitution or compensating units, bringing the total of Phase I affected units to 445. Emissions data indicate that 1995 SO_2 emissions at these units nationwide were reduced by almost 40% below their required level.

Phase II, began in the year 2000, tightens the annual emissions limits imposed on these large, higher emitting plants and also sets restrictions on smaller, cleaner plants fired by coal, oil, and gas, encompassing over 2,000 units in all. The program affects existing utility units serving generators with an output capacity of greater than 25 megawatts and all new utility units.

The NO_x program embodies many of the same principles of the SO_2 trading program in its design: a results-orientation, flexibility in the method to achieve emission reductions, and program integrity through measurement of the emissions. However, it does not "cap" NO_x emissions as the SO_2 program does, nor does it utilize an allowance trading system. The Act calls for a 2 million ton reduction in NO_x emissions by the year 2000. A significant portion of this reduction will be achieved by coal-fired utility boilers that will be required to install low NO_x burner technologies and to meet new emissions standards.

Toquop's PC Utility Boiler is subject to the provisions of the Acid Rain Program. Toquop will be submitting an Acid Rain Permit Application within the appropriate time frames.

4.0 EMISSIONS INVENTORY

4.1 EMISSIONS

See the following tables for a detailed list of the all facility's permitted emission limits. A PSD review is triggered in certain instances when emissions associated with a new major source or emissions increases resulting from a major modification are "significant". For a new source proposed to be located in an "attainment area" which is major for at least one regulated NSR pollutant, all pollutants for which the area is not classified as "non-attainment" and which are emitted in amounts equal to or greater than the "de-minimus threshold level", are also subject to PSD review. Table 4.1 below is a facility-wide potential emission summary and a comparison to the Significant Emission Rates from the *New Source Review Workshop Manual*, (USEPA, 1990 Draft). Table 4.2 shows potential emission rates from each unit. From these Tables it is evident that Toquop will be designated a major stationary source for PM, PM_{10}, NO_x, SO_2, CO, VOC's, Pb, sulfuric acid mist and HF.

BAPC's calculations generally agree with Toquop's calculated potential to emit. BAPC is not including estimates of emissions for wind erosion from the coal pile(s) or the ash disposal area in the Tables below, however BAPC has reviewed and agrees with Toquop's emission estimates for these areas.

Hazardous Air Pollutants (HAPs) generated at the facility include HCl, HF, Manganese (Mn) and Formaldehyde. The PC Boiler emits HCl and HF as the primary HAP components.

Table 4.1 – Facility Wide Potential to Emit (Ton/Year)

Pollutant	Potential to Emit (Ton/Year)	PSD Significant Emission Rate (ton/yr) 40 CFR 52.21(b)(23)(i)
PM	326.0	25.0
PM_{10} (filterable & condensable)	856.0	15.0
SO_2	1,352.0	40.0
CO	2,656.0	100.0
NO_x	1,614.0	40.0
VOC	82.5	40.0
Pb	1.05	0.6
H_2SO_4 Mist	133.0	7.0
HF	6.4	3.0 (total Fluoride)

Table 4.2 – Potential to Emit by Permit System

Emission Unit #	PM		PM_{10}		SO_2		CO		NO_x		VOC		Pb		H_2SO_4 Mist		HF		HCl		HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	Total (lb/hr)	Total (ton/yr)
S2.001[1]	60	**265**	181	**795**	308	**1,351**	605	**2,649**	363	**1,590**	18.3	**80**	0.24	**1.05**	30.4	**133**	1.5	**6.4**	11.6	**50.6**	19.9	**87.1**
S2.002[1]	1.5	**0.42**	2.1	**0.6**	0.14	**0.04**	3.15	**0.87**	8.64	**2.38**	0.21	**0.06**	Neg.	**Neg.**	Neg.	**Neg.**	N/A	**N/A**	Neg.	**Neg.**	Neg.	**Neg.**
S2.003[1]	1.5	**0.42**	2.1	**0.6**	0.14	**0.04**	3.15	**0.87**	8.64	**2.38**	0.21	**0.06**	Neg.	**Neg.**	Neg.	**Neg.**	N/A	**N/A**	Neg.	**Neg.**	Neg.	**Neg.**
S2.004[1]	0.49	**0.02**	0.49	**0.02**	0.36	**0.02**	8.49	**0.42**	15.68	**0.78**	Neg.	**Neg**.	Neg.	**Neg.**	N/A	**N/A**	N/A	**N/A**	N/A	**N/A**	Neg.	**Neg.**
S2.005[1]	0.09	**0.005**	0.09	**0.005**	0.004	**0.001**	1.63	**0.08**	1.88	**0.09**	Neg.	**Neg**	Neg.	**Neg.**	N/A	**N/A**	N/A	**N/A**	N/A	**N/A**	Neg.	**Neg**.
System 6 PF1.001 – PF1.004	0.11 total	**0.03** total	0.11 total	**0.03** total																		
System 7 S2.006 S2.007	0.38	**1.66**	0.38	**1.66**																		
System 8 PF1.005 – PF1.007	0.18 total	**0.05** total	0.18 total	**0.05** total																		
System 9 PF1.008 – PF1.010	0.18 total	**0.05** total	0.18 total	**0.05** total																		
System 10 S2.008 – S2.012	0.38	**1.66**	0.38	**1.66**																		
System 11 S2.013 – S2.018	0.50	**2.19**	0.50	**2.19**																		

Emission Unit #	PM		PM_{10}		SO_2		CO		NO_x		VOC		Pb		H_2SO_4		HF		HCl		HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	Total (lb/hr)	Total (ton/yr)
System 12 S2.019	0.30	**1.31**	0.30	**1.31**																		
System 13 PF1.011	0.30	**1.31**	0.30	**1.31**																		
System 14 S2.020	0.30	**1.31**	0.30	**1.31**																		
System 15 PF1.012	0.30	**1.31**	0.30	**1.31**																		
System 16 S2.021	0.30	**1.31**	0.30	**1.31**																		
System 17 PF1.013	0.30	**1.31**	0.30	**1.31**																		
System 18 S2.022	0.34	**1.50**	0.34	**1.50**																		
System 19 PF1.014	0.34	**1.50**	0.34	**1.50**																		
System 20 S2.023	0.34	**1.50**	0.34	**1.50**																		
System 21 PF1.015	0.34	**1.50**	0.34	**1.50**																		
System 22 S2.024	0.34	**1.50**	0.34	**1.50**																		
System 23 S2.025	0.34	**1.50**	0.34	**1.50**																		

Emission Unit #	PM		PM_{10}		SO_2		CO		NO_x		VOC		Pb		H_2SO_4		HF		HCl		HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	Total (lb/hr)	Total (ton/yr)
System 24 PF1.016	0.09	**0.09**	0.09	**0.09**																		
System 25 S2.026											**524.3 Lb/yr**	N/A										

LEGEND

[1] Fuel-Burning Emission Units

5.0 PREVENTION OF SIGNIFICANT DETERIORATION DETERMINATION

As discussed above, 40 CFR Part 52.21 specifies that Prevention of Significant Deterioration (PSD) review is required for any new major stationary source or any major modification. A major stationary source is defined as any pollutant emitting activities, which belong to the same two digit Source Industry Classification (SIC), and:

1. emits 100 tons/yr or more of a regulated air contaminate as 1 of the 28 listed categories of sources listed in 40 CFR 52.21; or

2. emits 250 tons/yr or more of a regulated air contaminant and belong to any other category sources.

The Toquop facility is classified as 1 of the 28 listed categories of sources and the total potential to emit of a single NSR regulated pollutant exceeds 100 tons/yr. Therefore, the facility will be a PSD major stationary source. It should be noted that the Minor Source baseline date for the hydrographic area (HA - 222), Virgin River Valley, in which this facility is proposing to locate, has been previously triggered for the following pollutants:

- Virgin River Valley – 12/19/2001 for SO_2, PM_{10} & NOx.
  (The application that triggered the Minor Source Baseline Date was withdrawn prior to a draft permit being issued).

Any modification of the facility that increases the emissions above the applicable significant emission threshold will require a new PSD/NSR review of the source. As such, additional emissions from this facility will consume increment (please see the discussion in Section 6).

5.0 PREVENTION OF SIGNIFICANT DETERIORATION DETERMINATION (Continued)

Toquop is required to submit a Best Achievable Control Technology (BACT) Analysis as part of their PSD application. Toquop has evaluated BACT, using the top-down approach, for each of the pollutants identified in Section 4, above, as being above the significance threshold. A top-down BACT analysis consists of the following:

- Identification of the available control technologies;
- Elimination of the technically infeasible control options;
- Ranking of the remaining control technologies in order from the most effective to the least effective;
- Evaluation of the most effective control option for economic, energy and environmental impacts, and if it is not eliminated on these impacts, acceptance of the technology as BACT; if not, evaluate the next most effective control option in the ranking; and
- Selection of the most effective control option not eliminated for economic or environmental impacts.

Toquop's BACT analysis is included as Attachment 2 of this review. BAPC concurs with Toquop's analysis. The following is a summary of each pollutant and selected BACT for each unit requiring a BACT analysis. In all instances, Toquop has selected the top technology with the lowest associated emission rates currently being permitted.

5.1 Pulverized Coal-fired Utility Boiler

5.1.1 NO_x BACT Analysis

Toquop has selected Selective Catalytic Reduction (SCR) in series with Low NOx Burners (LNB) and Over-Fired Air (OFA) as the BACT technology for controlling NO_x emissions from the PC boiler. Toquop is proposing an emission limit of 0.06 lb/MMBtu on a 24-hour rolling average for the PC boiler. This technology is consistent and the proposed emission limit is lower than BACT selected in other projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1.2 CO BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling CO emissions from the PC boiler. Toquop is proposing an emission limit of 0.10 lb/MMBtu on a 24-hour rolling average for the PC boiler. This technology and emission limit is consistent with BACT selected in other similar projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1.3 SO_2 BACT Analysis

Toquop has selected wet quicklime de-sulfurization and hydrated lime injection located prior to the fabric filter, in combination with low sulfur coal as the BACT technology for controlling SO_2 emissions from the PC boiler. It is the BAPC's position that BACT for SO_2 emissions from a PC Boiler located in the western United States is dry scrubbing. Toquop's proposed use of wet scrubbing to control SO_2 emissions from a PC Boiler is above and beyond BACT technology, and may, more appropriately, be considered LAER technology. Toquop is proposing an emission limit of 0.06 lb/MMBtu on a 24-hour rolling average for the PC boiler. This technology is consistent and the proposed emission limit is lower than BACT selected in other similar projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1.4 PM/PM_{10} BACT Analysis

Toquop has selected Fabric Filter Dust Collection as the BACT technology for controlling particulate emissions from the PC boiler. Toquop is proposing an emission limit of 0.01 lb/MMBtu, for PM filterable and 0.03 lb/MMBtu, both filterable and condensable for PM_{10}, on a 3-hour average for the PC boiler. This technology and emission limit is consistent with BACT selected in other projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1 Pulverized Coal-fired Utility Boiler (Continued)

5.1.5 H_2SO_4 mist and HF BACT Analyses

Toquop has selected wet quicklime de-sulfurization and hydrated lime injection before the fabric filter in combination with low sulfur coal as the BACT technology for controlling emissions of H_2SO_4 mist and HF from the PC boiler. Toquop is proposing an emission limit of 0.005 lb/MMBtu, on a 3-hour average for H_2SO_4 mist and 0.00024 lb/MMBtu for HF, on a 3-hour average, respectively, for the PC Boiler. This technology and emission limits are consistent with BACT selected in other projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1.6 VOC BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling VOC emissions from the PC boiler. Toquop is proposing an emission limit of 0.003 lb/MMBtu, on a 3-hour average for the PC boiler. This technology and emission limit is consistent with BACT selected in other projects on the RBLC database and EPA Region 4's PC Boiler Tables.

5.1.7 Pb BACT Analysis

Toquop has selected Fabric Filter Dust collection as the BACT technology for controlling Pb emissions from the PC boiler. Toquop has not proposed a BACT emission limit for Pb, however, since Pb is a regulated NSR pollutant, BAPC is conducting an analysis of the current Pb limits and will set the BACT emission rate. The fabric filter baghouse removes particles and condensed metals (including lead) from the flue gas by drawing dust-laden flue gas and condensables through a bank of filter tubes suspended in a housing. A filter cake, composed of the removed particulate, builds up on the dirty side of the bag. Periodically, the cake is removed through physical mechanisms (e.g., blast of compressed air from the clean side of the bag, mechanical shaking of the bags, etc.) which causes the cake to fall. The dust is then collected in a hopper and removed. Since BAPC agrees with Toquop's assessment that the fabric filter baghouse is the BACT control technology, BAPC does not need to conduct a full top-down analysis.

Lead (Pb) is a naturally-occurring element found in the Earth's crust. As a natural fuel extracted from the Earth's crust, coal contains trace levels of lead. During the coal combustion process, lead may be vaporized and later condensed or adsorbed by fly ash suspended in the flue gas. In a PC-boiler exhaust stream, lead is typically contained in the particulate matter with size less than 10 microns. Thus, the control technologies available for the control of lead emissions are the same technologies available for the control of particulate matter.

Fabric filter baghouses are highly efficient in the reduction of PM, PM10, lead, and other condensed trace elements and typically achieve around 99% efficiency, with a performance emission on the order of 1 to 5 $\times 10^{-5}$ lb/MMBtu, based on the recent additions to the RBLC database reviewed by the BAPC.

5.1.7 Pb BACT Analysis (Continued)

The lead emission rate for a coal-fired boiler depends on the lead content of the coal. The COALQUAL database developed by the USGS was also relied on in recent applications to determine the possible lead contents for PRB coal.
Based on the applications, for PRB coal, lead content is in the range of less than 1 ppm to 55 ppm, with an average of 4.42 ppm.

BAPC reviewed the RBLC database (see Table B-1 below), and recent applications for similar sized units (Ely Energy Center, LS Power) reviewed by BAPC. Based on that review, the BAPC is establishing 0.00004 lb/MMBtu as the BACT emission limit for Pb emissions.

Table B - 1
RBLC - PSD Sources for Pb
Pulverized Coal Boilers

RBLC ID	CORPORATE/COMPANY & FACILITY NAME	PROCESS DESCRIPTION	UNIT AND SIZE	PERMIT NUMBER	PERMIT DATE	CONTROL TECHNOLOGY	CONTROL EFFICIENCY	EMISSION LIMIT (LB/MMBTU)	REMARKS
TX-0496	SANDY CREEK ENERGY ASSOCIATES SANDY CREEK ENERGY STATION	PULVERIZED COAL BOILER	600 MW NET	PSD-TX-1039 AND 70861	7/24/2006			0.55 LB/H 0.41 T/YR	
MO-0071	GREAT PLAINS ENERGY KANSAS CITY POWER & LIGHT COMPANY - IATAN STATION	PULVERIZED COAL BOILER - UNIT 1	7,800 MMBTU/HR	012006-019	1/27/2006		--	0 LB/H	--
*MO-0060	CITY UTILITIES OF SPRINGFIELD CITY UTILITIES OF SPRINGFIELD - SOUTHWEST POWER STATION	PULVERIZED COAL FIRED BOILER	275 MW PC	122004-007	12/15/2004	BAGHOUSE	--	2.6100 E-5	0.31 T/YR
WI-0228	WISCONSIN PUBLIC SERVICE WPS - WESTON PLANT	SUPER CRITICAL PULVERIZED COAL ELECTRIC STEAM BOILER (S04, P04)	500 MW SCPC	04-RV-248	10/19/2004	FABRIC FILTER BAGHOUSE	--	2.5100 E-5	0.13 LB/HR
UT-0066	INTERMOUNTAIN POWER SERVICE CORPORATION INTERMOUNTAIN POWER GENERATING STATION - UNIT #3	PULVERIZED COAL FIRED ELECTRIC GENERATING UNIT	900 MW (Net) and 950 MW (Gross) PC	DAQE-AN0327010-04	10/15/2004	BAGHOUSE/FABRIC FILTER	--	0.0000	3-TEST RUN AVERAGE
WV-0023	LONGVIEW POWER, LLC MAIDSVILLE	BOILER, PC	600 MW	R14-0024	03/02/2004	DRY SOLID INJECTION W/ FABRIC FILTER AND WET SCRUBBER	--	1.7800 E-5	0.1090 LB/H 3 HOUR ROLLING
SC-0104	SANTEE COOPER SANTEE COOPER CROSS GENERATING STATION	BOILER, NO. 3 AND NO. 4	600 MW PC Each	0420-0030-CI	02/05/2004	ESP	99.75	1.6900 E-5	
03-RV 166	WISCONSIN ELECTRIC POWER COMPANY OAK CREEK POWER PLANT	2 SUPER CRITICAL PULVERIZED COAL BOILERS	615 MW	NOT YET ADDED TO RBLC	1/14/2004	BAGHOUSE	--	0.7900 E-5	7.9/TBTU
TX-0298	RELIANT ENERGY INC WA PARISH ELECTRIC GENERATING STATION	(2) BOILERS, UNITS 5 & 6, COAL & GAS, WAP5&6	7400 MMBTU/H	PSD-TX-901, PSD-TX-902 & -33M1	10/15/2003		--	5.8100 E-5	0.43 LB/H EACH UNIT 0.17 T/YR EACH UNIT
		BOILER UNIT 7, COAL, WAP7	6700 MMBTU/H				--	5.5200 E-5	0.37 LB/H EACH UNIT 0.15 T/YR EACH UNIT
		BOILER UNIT 7, COAL & GAS, WAP7	6700 MMBTU/H				--	5.5200 E-5	0.37 LB/H EACH UNIT 0.15 T/YR EACH UNIT
		(2) BOILERS, UNITS 5 & 6, WAP5&6, COAL	7400 MMBTU/H				--	5.8100 E-5	0.43 LB/H EACH UNIT 0.17 T/YR EACH UNIT
AR-0074	PLUM POINT ASSOCIATES, LLC PLUM POINT ENERGY	BOILER, UNIT 1 - SN-01	PC Boiler 550-800MW	1995-AOP-R0	08/20/2003	FABRIC FILTER	--	2.5600 E-5	
AR-0079	PLUM POINT ASSOCIATES, LLC PLUM POINT ENERGY	BOILER - SN-01	PC Boiler 550-800MW	1995-AOP-R0	08/20/2003	FABRIC FILTER	--	2.5600 E-5	
IA-0067	MIDAMERICAN ENERGY COMPANY (COUNCIL BLUFFS)	CBEC 4 BOILER & 3 CARBON SILOS	7675 MMBTU/H	PROJECT 02 528	06/17/2003	BAGHOUSE	--	2.6000 E-5	
TX-0358	RELIANT ENERGY, INC WASHINGTON PARISH ELECTRIC GENERATING STATION	(2) BOILER STACKS, WAP 5 & 6, COAL ONLY	6750 MMBTU/H	PSD-TX-33 M1	10/15/2002		--	5.8100 E-5	0.43 LB/H EACH UNIT 0.17 T/YR EACH UNIT
		BOILER STACK, WAP 7, COAL ONLY	6700 MMBTU/H				--	5.5200 E-5	0.37 LB/H EACH UNIT 0.15 T/YR EACH UNIT
TX-0342	RELIANT ENERGY INC LIMESTONE ELECTRIC GENERATING STATION	(2) BOILER UNIT 1 & 2 SCRUBBER STACKS, LMS1 & 2	7863 MMBTU/H	PSD-TX-371 (M3)	05/23/2001	COLD SIDE ESP	--	3.3100 E-5	0.26 LB/H EACH UNIT 0.46 T/YR EACH UNIT
TX-0275	RELIANT ENERGY, INC. W.A. PARISH ELECTRIC GENERATING STATION	UTILITY BOILER UNIT 8	650 MW	PSD-TX-234	12/21/2000	FABRIC FILTER	--	4.9300 E-5	0.33 LB/H EACH UNIT 0.13 T/YR EACH UNIT

5.2 Distillate fuel-fired Auxiliary Boilers

5.2.1 NO_x BACT Analysis

Toquop has selected LNB as the BACT technology for controlling NO_x emissions from the auxiliary boilers. Toquop is proposing an emission limit of 0.10 lb/MMBtu, for each auxiliary boiler, on a 3-hour average. This technology and emission limit is consistent with BACT selected in other similar projects on the RBLC database.

5.2.2 CO BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling CO emissions from the auxiliary boilers. Toquop is proposing an emission limit of 0.036 lb/MMBtu, for each auxiliary boiler, on a 3-hour average. This technology and emission limit is consistent with BACT selected in other similar projects on the RBLC database.

5.2.3 SO_2 and H_2SO_4 mist BACT Analysis

Toquop has selected firing ultra low sulfur distillate fuel (≤ 0.0015% by weight) as the BACT technology for controlling SO_2 and H_2SO_4 mist emissions from the auxiliary boilers. Toquop is proposing emission limits of 0.002 lb/MMBtu for SO_2 on a 3-hour average and 0.0004 lb/MMBtu for H_2SO_4 mist on a 3-hour average, respectively. This technology and emission limits are consistent with BACT selected in other similar projects on the RBLC database.

5.2.4 PM/PM_{10} BACT Analysis

Toquop has selected ultra low sulfur distillate fuel as the BACT technology for controlling PM and PM_{10} emissions from the auxiliary boilers. Toquop is proposing an emission limit of 0.018 lb/MMBtu for PM on a 3-hour average and 0.024 lb/MMBtu for both filterable and condensable PM_{10} on a 3-hour average, respectively. This technology and emission limits are consistent with BACT selected in other similar projects on the RBLC database.

5.2.5 VOC BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling VOC emissions from the auxiliary boilers. Toquop is proposing an emission limit of 0.003 lb/MMBtu on a 3-hour average. This technology and emission limit is consistent with BACT selected in other similar projects on the RBLC database.

5.3 Distillate fuel-fired Emergency Engines (Generator and Fire Pump)

These emergency engines will be subject to the requirements under the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60, Subpart IIII. Toquop proposes that the NSPS requirements for the emergency engines are equivalent to BACT since the NSPS requirements establish new maximum limits and are still being phased in for these source categories.

5.3.1 NO_x BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling NO_x emissions from both the generator and fire pump. Toquop is proposing an emission limit of 6.4 g/kW-hr (output basis) for the emergency generator on a 3-hour average, and 4.0 g/kW-hr for the fire pump on a 3-hour average.

5.3.2 CO BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling CO emissions from both the generator and fire pump. Toquop is proposing an emission limit of 3.5 g/kW-hr for both the generator and fire pump on a 3-hour average.

5.3.3 SO_2 BACT Analysis

Toquop has selected firing ultra low sulfur distillate fuel (≤0.0015% by weight) as the BACT technology for controlling SO_2 emissions from both the generator and fire pump. Toquop is proposing a SO_2 emission limit of 0.15 g/kW-hr (output basis) for the emergency generator on a 3-hour average, and 0.01 g/kW-hr for the fire pump on a 3-hour average.

5.3.4 PM/PM_{10} BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling PM and PM_{10} emissions from both the generator and fire pump. Toquop is proposing an emission limit of 0.2 g/kW-hr for both the generator and fire pump on a 3-hour average.

5.3.5 VOC BACT Analysis

Toquop has selected good combustion practices as the BACT technology for controlling VOC emissions from both the generator and fire pump. Toquop is proposing an emission limit of 6.4 g/kW-hr for the generator on a 3-hour average, and 4.0 g/kW-hr for the fire pump on a 3-hour average.

5.4 Materials Handling Systems: Non-Fugitive, Non-Combustion Systems

PM/PM_{10} BACT Analysis

Toquop has selected fabric filter technology as the BACT technology for controlling PM and PM_{10} emissions from the materials handling systems that are non-fugitive in type. Toquop is proposing an emission limit of 0.005 grain/dscf for the coal handling baghouses, and 0.01 grain/dscf for the ash, gypsum and quicklime handling baghouses. This technology and emission limits are consistent with BACT selected in other projects on the RBLC database. Water sprays will be in use on the inactive coal piles to reduce fugitive emissions. Water sprays will be in use on the active and emergency coal piles to reduce fugitive emissions. All haul roads will be paved to control fugitive dust.

BACT Emission Limits/Technology Requirement Summary

System	NO_x	CO	SO_2	PM/PM_{10}	Pb	H_2SO_4	HF

PC Boiler	Technology	SCR, LNB & OFA	Good Combustion Practices	Wet Scrubber	Baghouse	Baghouse	Wet Scrubber & Baghouse	Wet Scrubber & Baghouse
	Limit	0.06 lb/MMBtu	0.10 lb/MMBtu	0.06 lb/MMBtu	0.01 / 0.03 (total) lb/MMBtu	0.0004 lb/MMBtu	0.005 lb/MMBtu	0.00024 lb/MMBtu
	Averaging Period	24-hour rolling	24-hour rolling	24-hour rolling	3-hour avg.	3-hour avg.	3-hour average	3-hour average
Distillate fuel-fired Auxiliary Boilers (each)	Technology	LNB	Good Combustion Practices	Ultra Low Sulfur Distillate Fuel	Ultra Low Sulfur Distillate Fuel		Ultra Low Sulfur Distillate Fuel	–
	Limit	0.10 lb/MMBtu	0.036 lb/MMBtu	0.002 lb/MMBtu	0.018 / 0.024 (total) lb/MMBtu		0.0004 lb/MMBtu	–
	Averaging Period	3-hour average	3-hour average	3-hour average	3-hour average		3-hour average	–
Distillate fuel-fired Emergency Engines (Generator, Fire Pump)	Technology	Good Combustion Practices	Good Combustion Practices	Ultra Low Sulfur Distillate Fuel	Good Combustion Practices		Ultra Low Sulfur Distillate Fuel	–
	Limit	6.4, 4.0 g/kW-hr	3.5 g/kW-hr (both)	0.15, 0.01 g/kW-hr	0.2 g/kW-hr (both)		–	–
	Averaging Period	3-hour average	3-hour average	3-hour average	3-hour average		–	–
Ash, Gypsum & Quicklime Silos	Technology	Baghouse	–	–	–		–	–
	Limit	0.01 gr/dscf	–	–	–		–	–
Coal Handling	Technology	Baghouse	–	–	–		–	–
	Limit	0.005 gr/dscf	–	–	–		–	–
Haul Roads/ Surface Disturbance	Technology	paved & water sprays	–	–	–		–	–

6.0 AMBIENT AIR QUALITY IMPACT

The Toquop facility was required to provide an environmental analysis as part of the Class I permitting process to demonstrate that emissions from the proposed source would not cause or contribute to air pollution in violation of any NAAQS or PSD Increment standard.

6.1 Dispersion Model

Air dispersion modeling was used to evaluate air quality impacts from the proposed facility. The dispersion model used for the analysis was the latest version of AERMOD (04300). EPA regulatory default options (direction-specific building downwash and actual receptor elevation) were used for all model runs. Modeling was also conducted in accordance with the applicable provisions of the NAC 445B.308 through 311.

6.2 Meteorological Data

An on-site meteorological data monitoring program has been set up at the southeast corner of the proposed project Toquop site. The monitoring program includes an instrumented 50-meter meteorological tower and a Sonic Detection and Ranging (SODAR) profiler. Toquop has collected 1-year's worth of on-site meteorological data in accordance with the Bureau of Air Quality Planning requirements. The current on-site data collection began on April 20, 2006 and ended on April 30, 2007. For parameters not observed by the on-site meteorological instrumentation such as cloud cover, hourly observations were taken from St. George, Utah.

6.3 Receptor Grid

In order to thoroughly evaluate the air quality impacts surrounding the proposed Toquop facility site, a dense receptor grid based on rectangular UTM coordinates was used as follows:

- Fenceline Perimeter – 30-meter spacing;
- Near-field – 100-meter spacing from the fenceline to 2 km;
- Intermediate-field – 500-meter spacing from 2 km to 5 km;
- Far-field – 1,000 meter spacing from 5 km to 10km; and
- 2,000 meter spacing from 10 km to 20 km.

This receptor grid was used for determining the proposed Toquop project's significant / insignificant status for each of the criteria pollutant / averaging periods and for the cumulative modeling analysis. Depending upon the locations of the peak predicted concentrations, a separate model run using 100-meter spacing was made, if necessary, to calculate impacts near the receptor areas that exceed 75% of the Class II significant impact level (SIL) or other applicable standard. No additional receptors were added because the results of the SIL analysis for each pollutant and averaging period were already within the near-field receptor grid or were less than 75% of the respective SIL.

6.4 Modeling Methodology

In accordance with EPA's policy described in the New Source Review Workshop Manual, a two-step dispersion modeling procedure was used. The two steps are usually referred to as: (1) the preliminary analysis, and (2) the full, or cumulative, impact analysis.

6.4.1 Preliminary Analysis

In the preliminary analysis, the potential emissions from the proposed source are modeled without including emissions from other sources. If the preliminary analysis demonstrates that the source's emissions impacts are at, or below, a defined set of impact levels, referred to as the Significant Impact Levels (SIL), the source is not required to conduct a full impact analysis. The SIL's are shown in Table 6.1 below.

TABLE 6.1 – Significant Impact Levels (Class 2 areas) (UNITS OF $\mu g/m^3$)

POLLUTANT	ANNUAL	24-HOUR	8-HOUR	3-HOUR	1-HOUR
SO_2	1	5	-	25	-
TSP	1	5	-	-	-
PM_{10}	1	5	-	-	-
NO_2	1	-	-	-	-
CO	-	-	500	-	2,000
OZONE	-	-	-	-	(a)

NOTE: This Table DOES NOT APPLY to Class 1 Areas. If a Proposed Source is located within 10 km of a Class 1 Area, an impact of 1 $\mu g/m^3$ on a 24-hour basis for a pollutant is Significant.

(a) Any NET EMISSIONS INCREASE of 100 TPY of VOC subject to PSD would be required to perform a modeling analysis.

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.4.2 Full Impact Analysis

If the preliminary analysis demonstrates that the source's impact on air quality exceeds the significant impact level for one or more pollutants, a full impact analysis is conducted for those pollutants. The full impact analysis is conducted for an area referred to as the impact area. The impact area is a circular area selected so as to encompass all locations where the air quality impact from the proposed source exceeds the significant impact level. The radius of the circular impact area is called the radius of impact.

The full impact analysis requires the modeling of the proposed source in conjunction with other sources of emissions. However, the other sources to be included in the model for the purpose of evaluating the proposed source's impact in relation to the NAAQS may differ from those sources to be included for the purpose of evaluating PSD increment consumption.

When performing a full impact analysis for the purpose of comparing the impact on air quality to the NAAQS, existing nearby sources that cause a significant concentration within the impact area are included. Nearby sources are defined as those that are located within the impact area or a circular area extending 50-kilometers beyond the impact area.

The modeling conducted for a full impact analysis for NAAQS evaluation also requires the inclusion of ambient air quality data. The current on-site data collection began on April 20, 2006 and ended on April 30, 2007. The requirement to collect ambient air quality data can be waived if the impacts from the proposed source are below significant monitoring concentrations, also referred to as "de minimus" monitoring levels. The significant monitoring levels are shown in Table 6.2 below.

TABLE 6.2 – Significant Monitoring Levels (UNITS OF $\mu g/m^3$)

POLLUTANT	IMPACT	AVERAGING TIME
CO	575.0	8-hour
NO_x	14.0	Annual
PM_{10}	10.0	24-hour
SO_2	13.0	24-hour
VOC (as ozone)	--	--
Pb	0.1	Quarterly
Fluoride	25.0	24-hour

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.4.2 Full Impact Analysis (Continued)

In addition, under certain conditions, the ambient air quality data requirement can be satisfied by the use of existing air quality data for the proposed source location or a representative regional site. In these cases, the location, quality and date of the data is considered.

When performing a full impact analysis for the purpose of comparing the impact on air quality to the PSD increments, increment-consuming sources located within the impact area and a circular area extending 50 kilometers beyond the impact area are included. Unlike the full impact analysis for NAAQS evaluation, ambient air quality data is not included in the full impact analysis for PSD increment consumption.

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.5 Results of the Ambient Air Quality Impact Analysis

The first step in the air quality impact analysis was the completion of a preliminary analysis to determine if the emissions from the proposed facility would cause significant impacts to air quality with respect to any criteria pollutant.

The results of the preliminary modeling analysis indicate that the air quality impacts from the Toquop facility exceeded the PSD significant impact levels for NO_2, SO_2 and PM_{10}, therefore, a full impact analysis was subsequently performed for these pollutants. Table 6.3 below exhibits the results of the preliminary modeling analysis.

TABLE 6.3 – Results of the Preliminary Modeling Analysis

Pollutant	Averaging Period	Significant Impact Level (Class 2 areas) ($\mu g/m^3$)	Maximum Modeled Concentration (1-year of On-Site Met Data) ($\mu g/m^3$)	Modeled Concentration Exceeds Class 2 SIL?
CO	8-hour	500.0	**216.6**	NO
CO	1-hour	2,000.0	**694.31**	NO
NO_2 [1]	Annual	1.0	**6.305**	**YES**
SO_2	Annual	1.0	**0.31**	NO
SO_2	24-hour	5.0	**6.82**	**YES**
SO_2	3-hour	25.0	**50.89**	**YES**
PM_{10}	Annual	1.0	**4.73**	**YES**
PM_{10}	24-hour	5.0	**23.63**	**YES**
Pb	Quarterly	N/A	**0.012**	N/A

LEGEND:
[1] The modeled Annual NO_2 maximum impact was multiplied by the national default NO_x / NO_2 ratio of 0.75 (as recommended in 40 CFR, Appendix W)

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.5 Results of the Ambient Air Quality Impact Analysis (Continued)

Since the predicted impact on air quality from the proposed Toquop facility exceeded

the Class 2 area SILs for NO_2, SO_2 and PM_{10}, a full impact analysis was conducted for these three pollutants at applicable averaging periods. The full impact analysis is conducted for an area referred to as the impact area. Table 6.4 below summarizes the radius of impact (ROI) for the NO_2, SO_2 and PM_{10} modeling runs as determined from the preliminary analysis.

TABLE 6.4 – Radius of Impact for NO_2, SO_2 and PM_{10}

Pollutant	Averaging Period	Radius of Impact (ROI) (1-year of On-Site Met data) (km)[1]
NO_2	Annual	2.0
SO_2	3-hour	8.0
SO_2	24-hour	8.0
PM_{10}	Annual	3.0
PM_{10}	24-hour	3.0

The annual significant impact areas are used to determine which Hydrographic Areas (HA's) are significantly impacted by the proposed facility. Only annual impacts are used to determine if the minor source baseline date for a planning area has been triggered. [2]

Adjacent Nevada Hydrographic Basins impacted by the proposed Toquop facility include: Lower Meadow Valley Wash Basin, Tule Desert Basin and Lower Moapa Basin. Modeled results from the proposed Toquop facility indicate no exceedences of the Class II SIL will occur at these adjacent Hydrographic Basins.

Prior to the submittal and subsequent determination of completeness of this PSD application for the Toquop Energy Project, the minor source baseline date for NO_x SO_2 and PM_{10} had previously been triggered for HA 222 (Virgin River Valley). The trigger date was December 19, 2001.

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[1] Toquop's modeling results indicate that HA 222 (Virgin River Valley) will contain the highest predicted pollutant concentrations and therefore, continued modeling was limited to the predicted ROI.

[2] Per 40 CFR 52.21(15)(i), Baseline area means any intrastate area (and every part thereof) designated as attainment or unclassifiable under Section 107(d)(1)(D) or (E) of the Clean Air Act in which the major source or major modification establishing the minor source baseline date would construct or would have an air quality impact equal to or greater than 1 μg/m^3 (**annual average**) of the pollutant for which the minor source baseline date is established.

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.6 Full Impact Analysis – NAAQS Evaluation

A full impact analysis was conducted for the purpose of comparing the impact on air quality from the proposed Toquop facility to the NAAQS. A source emissions inventory for the area out to 80 km of the proposed project was received from the states of Nevada, Arizona and Utah.

As stated earlier, a full impact analysis requires the inclusion of ambient air quality data.

As part of the full impact analysis, the measured maximum background concentrations are added to the modeled predicted post-project concentrations to demonstrate compliance with the NAAQS. As stated earlier, a source emissions inventory for the area surrounding the proposed Toquop site was received from the states of Nevada, Arizona and Utah. A complete listing of the other nearby emissions sources included in the modeling analysis is included in Attachment 5 of this technical support document. The results of the full impact analysis for NAAQS evaluation, from the proposed Toquop facility, are summarized in Table 6.5 below.

TABLE 6.5 – Summary of Full Impact Analysis for NAAQS Evaluation

Pollutant	Averaging Period	NAAQS Standard ($\mu g/m^3$)	Ambient Background ($\mu g/m^3$)	Modeled Impact ($\mu g/m^3$)	Full Air Quality Predicted Impact (Modeled + Background) (1-year of On-site Met data) ($\mu g/m^3$)
NO_2	Annual	100	7.0	6.74	**13.74**[1]
SO_2	3-hour	1,300	28.0	48.44	**76.44**
SO_2	24-hour	365	19.1	7.01	**26.11**
PM_{10}	Annual	50	8.8	4.51	**13.31**
PM_{10}	24-hour	150	41.0	36.80	**77.80**

[1] The modeled Annual NO_2 maximum impact was multiplied by the national default NO_x / NO_2 ratio of 0.75 (as recommended in 40 CFR, Appendix W)

6.0 AMBIENT AIR QUALITY IMPACT (Continued)

6.7 Full Impact Analysis – PSD Increment Consumption Evaluation

A second full impact analysis was conducted for the purpose of comparing the impact on air quality, from the proposed Toquop facility, to the PSD Increment. It should be noted that the Minor Source baseline date for the hydrographic area (HA - 222), Virgin River Valley, in which this facility is proposing to locate, has been previously triggered for the following pollutants:

- Virgin River Valley – 12/19/2001 for SO_2, PM_{10} & NOx.
  (The application that triggered the Minor Source Baseline Date was withdrawn prior to a draft permit being issued).

Other increment consuming sources were included in the analysis.
The results of the full impact analysis from NO_2, PM_{10} and SO_2 for PSD Increment Consumption evaluation is summarized in Table 6.6 below.

Pursuant to 40 CFR § 52.21(c): Ambient Air Increments – In areas designated as Class I, II or III, increases in pollutant concentration over the baseline concentration shall be limited to the following…"For any period, other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any one location." So, for averaging periods other than annual, the Highest, 2nd-High modeling concentration results may be used for comparison to the Class II PSD Increment standards.

TABLE 6.6 – Summary of the Full Impact Analysis for PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Standard (Class II area) ($\mu g/m^3$)	Full Air Quality Impact (1-year of On-Site Met data) ($\mu g/m^3$)[1]
NO_2	Annual	25	**6.74**
SO_2	3-hour	512	**48.44**[2]
SO_2	24-hour	91	**7.01**[2]
PM_{10}	Annual	17	**4.51**
PM_{10}	24-hour	30	**19.77**[2]

[1] Full Air Quality Impact concentration based on potential emissions from Toquop as well as potential emissions from other nearby sources.

[2] Pursuant to 40 CFR 52.21(c): For any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at
any one location, (i.e., the highest, second-high value of PM_{10} and SO_2 are listed for comparison with the PM_{10} and SO_2 Increment Standard).

7.0 ADDITIONAL AIR QUALITY IMPACTS

The PSD regulations also require that an applicant provide an analysis of the impacts on the air quality related values (AQRVs) associated with the project. The AQRVs are

the perceived environmental attributes of an area such as visibility, flora and fauna, and water and soils in both Class I and Class II areas. The additional impacts analysis attempts to determine the effects of pollution-caused changes to these values. In addition, the AQRVs for a Class I area are defined by the applicable Federal Land Manager (FLM), (e.g., USDA Forest Service and the National Park Service) for that area and can vary between Class I areas. Each FLM is allowed to comment on what constitutes an adverse impact in a Class I area. If a FLM determines, based on any information available, that a new or modified source will adversely impact the AQRV's in a Class I area, after a case-by-case evaluation, the FLM may recommend that the reviewing agency deny issuance of the permit. In some cases this may result even if the modeling indicates that no applicable Class I increments will be exceeded.

Please note, Class II areas do not have any regulatory standards for AQRV's.

PSD guidance require that facilities within 100 km of a PSD Class I area perform a modeling evaluation of the ambient air quality in terms of Class I PSD Increment and AQRVs. At the request of the FLM, the following Class I areas, out to 300 km, have been assessed for this analysis:

- Grand Canyon National Park;
- Zion National Park;
- Bryce Canyon National Park;
- Capitol Reef National Park;
- Sycamore Canyon Wilderness.

There are no other Class I areas within 300 km of the proposed Toquop facility, and the National Park Service has approved this list of Class I areas to be analyzed by Toquop. Project impacts for SO_2, H_2SO_4 mist, NO_2 and PM_{10} pollutants subject to PSD review, have been assessed for the Class I areas (and portions thereof) within 300 km of the proposed Toquop facility. 300 km is the predicted distance limit of CALPUFF for return of meaningful data.

Since the Class I areas are located more than 50 km from the proposed Toquop facility, the CALPUFF model, along with CALMET, the meteorological processor, has been applied in a refined mode. The guidance in Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II suggests that CALPUFF could be first used in a screening mode and then a refined mode if needed.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.1 Modeling for Sensitive Class II Areas

CALPUFF modeling also was conducted to determine the impacts of the proposed Toquop facility on nearby sensitive Class II areas. At the request of the Federal Land Manager (FLM), modeling was conducted at Lake Mead National Recreation Area to determine Toquop's impacts on PSD Increment, regional haze and acidic deposition. Again, other than Class II PSD increment standard, there are no visibility or deposition standards for Class II areas.

7.2 Selection of Dispersion Model

In accordance with guidance provided by US EPA Region IX, Toquop ran CALPUFF Version 5.711a, the current "official US EPA version", (level 040716) in a refined mode to determine the effect that the proposed project's emissions had on SO_2, NO_2 and PM_{10} increment, regional haze and sulfur and nitrogen deposition at the nearby Class I areas.

CALMET Version 5.53a, (level 040716) is the companion official US EPA version of the meteorological pre-processor for the CALPUFF modeling system that produces three-dimensional wind fields that incorporate a variety of meteorological data observations and terrain effects. Advanced meteorological data, in the form of prognostic mesoscale meteorological data (such as the Fifth Generation Mesoscale Model [MM5]) has been used to provide a superior estimate of the initial wind fields.

7.3 Computational Grid

Toquop has used two separate CALMET and CALPUFF grid systems for this analysis. The first grid system (2-km resolution) extends 100 km west of the source and at least 50 km in all other directions beyond the proposed Toquop site, along with any portions of Capitol Reef and Sycamore Canyon within 300 km of the proposed Toquop site. The additional buffer distance allows for the consideration of puff trajectory re-circulations.

The CALPUFF model developer has noted in instructional courses that puff impacts in complex terrain can be refined with a finer grid spacing. Therefore, an additional nested meteorological and computational grid was used to refine the depiction of terrain features made in CALMET for the closest Class I areas. Specifically, a 500-meter nested grid was used to process impacts at Bryce Canyon, Grand Canyon and Zion. Capitol Reef and Sycamore Canyon impacts were processed on the main 2-km grid due to their greater distance for the proposed Toquop facility site.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.4 Background Air Quality Data

The CALPUFF refined modeling has been conducted with hourly background ozone data from rural monitors within and just outside the modeling domain. In the absence of hourly ozone data for the monitoring stations used in the analysis during a particular hour, the model default of 80 ppb has been used. In addition, monthly-averaged ammonia background values, as part of the Desert Rock Class I modeling analyses, have been used. The monthly ammonia background values are summarized below:

- December, January – March: 0.2 ppb
- April – May: 0.5 ppb
- June – September: 1.0 ppb
- October – November: 0.5 ppb

7.5 Class I PSD Increment Values

CALPUFF and CALPOST have been used with CALMET meteorological data to assess maximum concentrations of SO_2, NO_2 and PM_{10} due to emissions from the PC Boiler stack at Bryce Canyon, Grand Canyon, Zion, Capitol Reef and Sycamore Canyon. The modeled concentrations at all receptors within the Class I areas have been documented and compared to the proposed Significant Impact Level (SILs) shown in Table 7.1 below. These SILs have been accepted by the FLM in their review of the modeling protocol. If a modeled impact is below the applicable SIL concentration, then the project will be assumed to have an insignificant impact, and no further modeling will be required for increment consumption analyses for that pollutant and averaging time.

TABLE 7.1 – Class I Area SILs

Pollutant	3-hour Averaging Period ($\mu g/m^3$)	24-hour Averaging Period ($\mu g/m^3$)	Annual Averaging Period ($\mu g/m^3$)
NO_2	N/A	N/A	0.10
SO_2	1.00	0.20	0.10
PM_{10}	N/A	0.32	0.16

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.6 Class II PSD Increment Values (Sensitive Class II Areas)

CALPUFF and CALPOST have been used with CALMET meteorological data to assess maximum concentrations of SO_2, NO_2 and PM_{10} due to emissions from the PC Boiler stack at Lake Mead National Recreational Area. The modeled concentrations at all receptors within the Class I areas have been documented and compared to the Class II Area Significant Impact Level (SILs) shown in Table 7.2 below.

TABLE 7.2 – Class II Area SILs

Pollutant	3-hour Averaging Period ($\mu g/m^3$)	24-hour Averaging Period ($\mu g/m^3$)	Annual Averaging Period ($\mu g/m^3$)
NO_2	N/A	N/A	1.0
SO_2	25.0	5.0	1.0
PM_{10}	N/A	5.0	1.0

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.7 Acidic Deposition

CALPUFF and CALPOST have been applied to obtain upper limit estimates of annual wet and dry deposition of sulfur and nitrogen compounds, in units of kilogram/hectacre/year (kg/ha/yr) associated with emissions from the main PC Boiler stack at Bryce Canyon National Park, Grand Canyon National Park, Zion National Park, Capitol Reef National Park and Sycamore Canyon Wilderness. Specifically, CALPUFF has been used to model both wet and dry deposition of SO_2, SO_4, nitrates and nitric acid as well as dry deposition of NO_2 to estimate the maximum annual wet and dry deposition of sulfur and nitrogen at the Class I areas.

The US Department of Agriculture Forest Service (USFS) web site indicates that the minimum detectable level for measuring an increase in wet deposition of sulfates or nitrates is 0.5 kg/ha/yr. For conservation, the USFS recommends a significance level of one-tenth of this minimum detectable level, or 0.05 kg/ha/yr. The FLM also has recently developed a Deposition Analysis Threshold (DAT) of 0.005 kg/ha/yr in the west (FLAG 2002) to be used as a threshold for further FLM analysis, rather than an adverse impact threshold (Porter 2004).

It is important to note that the DAT value was established because the FLMs are concerned that, over time, cumulative deposition from emission sources may produce impacts upon Class I areas that are of concern. The FLMs want to have a reasonable assurance that cumulative deposition from all new sources does not exceed 50% of natural background. Natural background in western Class I areas is 0.25 kg/ha/yr. This value was multiplied by 0.5 to obtain 50% of natural background, and by 0.04 which is a safety factor to account for cumulative new source growth consisting of 25 identical facilities in the area of concern (0.25 x 0.5 x 0.04 = 0.005). Therefore, the use of a 0.005 kg/ha/yr threshold of concern for a new PSD source is very conservative due to the assumption of cumulative growth and due to not considering a substantial reduction in deposition from reductions in SO_2 emissions in the west that will be part of the Regional Haze Rule program.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.8 VISCREEN Analysis

The PSD regulations require an analysis of visibility impairment (i.e., plume blight) at

Class I areas within 50 km of a proposed PSD project. There are no Class I areas within 50 km of the proposed Toquop facility, however, the FLMs have requested that a plume visibility impairment analysis be conducted for the portions of Lake Mead National Recreation Area that fall within 50 km of the proposed Toquop facility.

The plume visibility analysis was conducted with the most current version of US EPA's screening model VISCREEN to determine if project emissions will impair visibility at the Lake Mead National Recreation Area. VISCREEN was applied with the guidance provided in USEPA's Workbook for Plume Visual Impact Screening and Analysis (1992) (Workbook). The VISCREEN model was applied to estimate two visual impact parameters: plume perceptibility (ΔE) and plume contrast (Cp).

Screening-level guidance indicates that values above 2.0 for ΔE and +/- 0.05 for Cp are considered perceptible. The Workbook offers two levels of analysis. Level 1 screening analysis which is the most simplified and conservative approach employing default meteorological data with no site-specific conditions. The Level 2 analysis takes into account representative meteorological date and site-specific conditions such as complex terrain.

7.9 Refined CALPUFF Model Results

7.9.1 PSD Class I Increment Analysis

CALPUFF modeling was used to estimate the maximum ambient concentrations of SO_2, NO_2 and PM_{10} at Bryce Canyon National Park, Grand Canyon National Park, Zion National Park, Capitol Reef National Park and Sycamore Canyon Wilderness to compare to US EPA-proposed Class I SILs. The CALPOST program was used to obtain pollutant-specific impacts for the applicable averaging periods.

The PSD increment modeling results for the proposed Toquop project emissions are provided in Table 7.3 below. The modeling results indicate that the proposed Toquop project has insignificant impacts for all pollutants and averaging times for all years modeled. Therefore, no additional modeling for PSD increment consumption is required for any of the PSD Class I areas.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9 Refined CALPUFF Model Results (Continued)

TABLE 7.3 – Class I Area PSD Increment Modeling Results (2003 – 2005)

Pollutant	Class I Area	Averaging Period	Maximum Modeled Concentrations (µg/m^3)			Class I SIL (µg/m^3)	PSD Class I Increment (µg/m^3)
			2003	2004	2005		
SO_2	Capitol Reef National Park	3-hr	0.160	0.128	0.124	1.0	25
		24-hr	0.055	0.022	0.037	0.2	5
		Annual	0.002	0.001	0.001	0.1	2
	Sycamore Canyon Wilderness	3-hr	0.104	0.075	0.096	1.0	25
		24-hr	0.019	0.014	0.016	0.2	5
		Annual	0.001	0.0005	0.001	0.1	2
	Bryce Canyon National Park	3-hr	0.161	0.137	0.996	1.0	25
		24-hr	0.035	0.024	0.184	0.2	5
		Annual	0.002	0.002	0.002	0.1	2
	Grand Canyon National Park	3-hr	0.637	0.858	0.856	1.0	25
		24-hr	0.111	0.161	0.150	0.2	5
		Annual	0.004	0.005	0.004	0.1	2
	Zion National Park	3-hr	0.574	0.454	0.552	1.0	25
		24-hr	0.093	0.064	0.123	0.2	5
		Annual	0.005	0.004	0.004	0.1	2
PM_{10}	Capitol Reef	24-hour	0.047	0.012	0.031	0.3	8
		Annual	0.002	0.001	0.001	0.2	4
	Sycamore Canyon	24-hour	0.013	0.012	0.014	0.3	8
		Annual	0.001	0.0004	0.001	0.2	4
	Bryce Canyon	24-hour	0.025	0.015	0.017	0.3	8
		Annual	0.001	0.001	0.001	0.2	4
	Grand Canyon	24-hour	0.069	0.124	0.079	0.3	8
		Annual	0.003	0.004	0.003	0.2	4
	Zion	24-hour	0.086	0.041	0.075	0.3	8
		Annual	0.004	0.003	0.003	0.2	4
NO_2	Capitol Reef	Annual	0.0003	0.0002	0.0003	0.1	2.5
	Sycamore Canyon	Annual	0.0001	0.00003	0.0001	0.1	2.5
	Bryce Canyon	Annual	0.0004	0.0003	0.001	0.1	2.5
	Grand Canyon	Annual	0.002	0.002	0.002	0.1	2.5
	Zion	Annual	0.002	0.001	0.002	0.1	2.5

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9 Refined CALPUFF Model Results (Continued)

7.9.2 VISCREEN Results

There is no identified scenic vista within 50 km of the proposed Toquop project site. However, as requested by the NPS, a local plume blight analysis was conducted for Lake Mead National Recreation Area using the visibility screening model, VISCREEN. The VISCREEN model is recommended by the US EPA as a screening tool to determine the visibility impacts for source-observer distances of up to 50 km.

The VISCREEN model was applied with Level-1 defaults and the potential emissions discharged from the main PC Boiler stack at the proposed Toquop facility. The source-observer distance was assumed to be 37 km. A background visual range of 252 km was used for the VISCREEN analysis. This visual range corresponds to the natural background extinction for the nearby Grand Canyon National Park of Mm^{-1} as listed in the *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report* (December, 2000). The following equation was used to calculate the visual range from the extinction at Grand Canyon National Park (the closest Class I Area to Lake Mead National Recreation Area):

$$V_r = (3.192 \times 1000) / \beta_{ext}$$

Where: β_{ext} = extinction in unit of Mm^{-1} (inverse megameters)

Two separate VISCREEN runs were conducted to account for the cardinal wind directions that intersect Lake Mead National Recreation Area. Those two sectors include wind directions from due north and from north-northeast. For each sector, the wind speed and stability class was derived according to the "Workgroup" procedures. For the due north direction, VISCREEN was run with a wind speed of 6 m/s and a stability class of 4. For the north-northeast direction, VISCREEN was run with a wind speed of 4 m/s and stability class of 4. These meteorological conditions were developed using 5 years of surface data from Las Vegas McCarran International Airport (1987 through 1991).

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9 Refined CALPUFF Model Results (Continued)

7.9.2 VISCREEN Results (Continued)

Due North Sector

The maximum VISCREEN results inside Lake Mead National Recreation Area for color difference index (ΔE) was 5.33 against sky and 9.42 against terrain. The maximum VISCREEN result inside the nearest Class I Area (Grand Canyon National Park) for contrast (|C|) was 0.106 against sky and 0.069 against terrain.

North-Northeast Sector

The maximum VISCREEN results inside Lake Mead National Recreation Area for color difference index (ΔE) was 1.37 against sky and 2.86 against terrain. The maximum VISCREEN result inside the nearest Class I Area (Grand Canyon National Park) for contrast (|C|) was 0.027 against sky and 0.019 against terrain.

Since there are no regulatory standards for PSD Class II areas, these values are provided for informational purposes only.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9.3 Other Impacts Analysis

CALPUFF modeling was used to estimate the maximum ambient concentrations of SO_2, NO_2 and PM_{10} at Lake Mead National Recreation Area to compare to US EPA-proposed Class II SILs. The CALPOST program was used to obtain pollutant-specific impacts for the applicable averaging periods.

The PSD increment modeling results for the proposed Toquop project emissions are provided in Table 7.4 below. The modeling results indicate that the proposed Toquop project has insignificant impacts for all pollutants and averaging times for all years modeled. Therefore, no additional modeling for PSD increment consumption is required for Lake Mead National Recreation Area.

TABLE 7.4 – Class II Area PSD Increment Modeling Results (2003 – 2005)

Pollutant	Class II Area	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)			Class II SIL ($\mu g/m^3$)	PSD Class II Increment ($\mu g/m^3$)
			2003	2004	2005		
SO_2	Lake Mead	3-hour	2.681	2.569	3.092	25	512
		24-hour	0.699	0.891	0.844	5	91
		Annual	0.045	0.059	0.052	1	20
PM_{10}	Lake Mead	24-hour	0.374	0.459	0.469	5	30
		Annual	0.033	0.042	0.037	1	17
NO_2	Lake Mead	Annual	0.039	0.057	0.045	1	25

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9 Refined CALPUFF Model Results (Continued)

7.9.4 Visibility Analysis

Regional haze modeling was conducted with CALPUFF using the FLAG guidance for Bryce Canyon National Park, Grand Canyon National Park, Zion National Park, Capitol Reef National Park and Sycamore Canyon Wilderness. In addition, regional haze modeling results have been provided for Lake Mead National Recreation Area using the FLAG guidance. The regional haze modeling results are presented in Table 7.5 below. As indicated, the regional haze modeling results using the FLAG guidance have no days above a 5% change in extinction at any Class I area during any year modeled. Therefore, according to the FLAG guidance, the proposed Toquop project does not have a significant regional haze impact and no further modeling is required. The proposed Toquop project does show impacts above 5% change in extinction for Lake Mead National Recreation Area, but since this area is not designated as a mandatory PSD Class I area, there are no regulatory visibility standards. Please refer to **Section 7.9.3** for Lake Mead modeled impacts.

TABLE 7.5 – Regional Haze Modeling Results - FLAG (2003 – 2005)

Class I Area	2003			2004			2005		
	Days > N% ΔB_{ext}		MAX% ΔB_{ext} [1]	Days > N% ΔB_{ext}		MAX% ΔB_{ext} [1]	Days > N% ΔB_{ext}		MAX% ΔB_{ext} [1]
	5%	10%		5%	10%		5%	10%	
MVISBK=2, FLAG Background, 2-km Grid									
Capitol Reef	0	0	3.04	0	0	1.42	0	0	2.17
Sycamore Canyon	0	0	1.69	0	0	1.01	0	0	1.22
MVISBK=2, FLAG Background, 500-m Grid									
Bryce Canyon	0	0	4.03	0	0	0.91	0	0	1.85
Grand Canyon	0	0	2.75	0	0	4.33	0	0	3.32
Zion	0	0	4.70	0	0	1.95	0	0	4.61

NOTES:

[1] ΔB_{ext} = change in atmospheric light condition.

7.0 ADDITIONAL AIR QUALITY IMPACTS (Continued)

7.9 Refined CALPUFF Model Results (Continued)

7.9.5 Acidic Deposition Analysis

CALPUFF modeling was used to provide upper limit estimates of annual (wet and dry) deposition of sulfur and nitrogen compounds (kg/ha/yr) associated with emissions of SO_2 and NO_2 from the proposed Toquop project at Bryce Canyon National Park, Grand Canyon National Park, Zion National Park, Capitol Reef National Park and Sycamore Canyon Wilderness to compare to NPS Class I Deposition Analysis Thresholds (DATs). The results are summarized in Table 7.6 below.

TABLE 7.6 – Deposition Modeling Results - FLAG (2003 – 2005)

Pollutant	Class I Area	Averaging Period	Maximum Modeled Deposition Rate (kg/ha/yr)			NPS Class I Deposition Analysis Thresholds (kg/ha/yr)
			2003	2004	2005	
Sulfur	Capitol Reef	Annual	0.0011	0.0012	0.0015	0.005
	Sycamore	Annual	0.0005	0.0006	0.0006	0.005
	Bryce	Annual	0.0015	0.0018	0.0016	0.005
	Grand	Annual	0.0012	0.0016	0.0018	0.005
	Zion	Annual	0.0044	0.0045	0.0045	0.005
Nitrogen	Capitol Reef	Annual	0.0007	0.0008	0.0010	0.005
	Sycamore	Annual	0.0003	0.0005	0.0004	0.005
	Bryce	Annual	0.0009	0.0011	0.0020	0.005
	Grand	Annual	0.0007	0.0011	0.0010	0.005
	Zion	Annual	0.0025	0.0025	0.0024	0.005

8.0 CONCLUSIONS / RECOMMENDATIONS

Based on the above review of the Operating Permit to Construct application and Best Available Control Technology analysis, Toquop Energy LLC.'s, request for a Class I Operating Permit to Construct for the Toquop facility does not violate any applicable requirements. The Operating Permit to Construct Application was deemed complete, pursuant to NAC 445B.3364(2), when the preliminary determination to issue the Class I Operating Permit to Construct was made on December 21, 2007 (Attachment 3). As a result, I recommend that the conditions specified in the Draft Operating Permit to Construct be submitted to the public for review, in accordance with NAC 445B.3364(5).

Attachment (1) Facility and Vicinity Map
Attachment (2) BACT Analysis
Attachment (3) Preliminary Determination to Issue the Draft Permit / Application Completeness Letter
Attachment (4) Emission Calculations
Attachment (5) Nearby Source Inventory
Attachment (6) Draft Operating Permit to Construct

_____ _____

Rod A. Moore Date
Staff Engineer, Permitting Branch

_____ _____

Matthew A. DeBurle Date
Supervisor, Permitting Branch

Attachment 1

Facility (and Vicinity) Map
[Page 8 in Application Overview]

Attachment 2

BACT Analysis
Application Appendix 10

Attachment 3

Preliminary Determination to Issue the Draft Permit / Application Completeness Letter

Attachment 4

Nearby Source Inventory
Application Appendix 8

Attachment 5

Emission Calculations
Application Appendix 5

Attachment 6

Draft Permit